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Received 8-28-31

Approved Date 9/30/43

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MELLON INSTITUTE OF INDUSTRIAL RESEARCH

UNIVERSITY OF PITTSBURGH

AUG 3 1943

PROGRESS REPORT for the month ended August 31, 1943

Carbide and Carbon Chemicals Corporation Industrial Fellowship No. 274-6

Subjects under
which report is
to be indexed } Removal of Phenols from the Skin.

CONTAINS NO CBI

Removal of Phenols from the Skin

To determine the effectiveness of various methods for removing phenol and substituted phenols from the intact skin the following technique was developed. Albino and piebald rats of both sexes were used as the test animals. The weight range included animals between 80 and 200 grams. The bellies of the rats were clipped and the test material applied for a one minute interval and then carefully wiped off with a standard size pledget of cotton. The survivors were observed for a 14 day period to determine mortalities. The smallest dose killing all of the rats dosed by this technique was determined in like manner for each of the six test materials.

To compare the efficacy of 95% alcohol versus a solution containing 5.0% ferric chloride, 50% ethyl alcohol and 45% water, the test was performed in the manner outlined above, except that the materials were removed with a cotton pledget wet with 5 ml. of the antidote being tested. The results are tabulated below:

Material	Dosage gm./kg.	Fractional Mortalities after 1 min. Contact and Removal with		
		Dry Cotton	95% Alcohol	5% FeCl ₃ Mixture
100% phenol	1.58	5/5	1/10	3/10
60% phenol and 40% p-tert.-butyl phenol	2.52	5/5	8/10	7/10
60% phenol and 40% p-tert.-amyl phenol	2.52	5/5	7/10	9/10
50% phenol and 50% o-cresol	1.58	4/5	6/10	4/10
50% phenol and 50% o-tert.-butyl phenol	3.16	5/5	9/10	7/10
50% phenol and 50% o-sec.-butyl phenol	3.16	5/5	7/10	8/10

The above data indicates that the substituted phenols are no more toxic than phenol by skin absorption but they appear to penetrate the superficial layers of the skin more rapidly and hence are harder to remove. 95% alcohol is fairly effective for the removal of plain phenol and the FeCl₃ mixture somewhat less effective. The results on the mixtures of phenol and substituted phenols do not indicate that either method of removal is satisfactory and furthermore the differences in mortality are not sufficiently great to rate one as better than the other.

Comparisons with soap and water washing will be made soon.

Henry F. Smyth, Jr.--rag

C. Boyd Shaffer

Typed: August 28, 1943

Henry F. Smyth, Jr.

SENIOR INDUSTRIAL FELLOW
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